DRAFT
EVALUATION REPORT
DUTRA MATERIALS
Application # 10901, Plant # 16483
3355 South Petaluma Blvd.
Petaluma, CA 94952

I. BACKGROUND

Dutra Materials has applied for Authorities to Construct/Permits to Operate for the following equipment:

- **S-1 Aggregate Off-Loading Transfer by Trucks or Enclosed Conveyors, abated by A-1 Water Spray System**
- **S-2 Aggregate & Reclaimed Asphalt Stockpiles (8), 2.45 total acres, abated by A-2 Water Spray**
- **S-3 Aggregate & Reclaimed Asphalt Pavement (RAP) Bins (7) abated by A-3 Water Spray System**
- **S-4 Aggregate & Reclaimed Asphalt Pavement (RAP) Conveyors abated by A-4 Water Spray System**
- **S-5 Aggregate Screen abated by A-5 Water Spray System**
- **S-6 Asphalt Oil Tank, 30,000 gallons capacity, abated by A-6, Surface Condenser**
- **S-7 Asphalt Oil Tank, 30,000 gallons capacity, abated by A-7, Surface Condenser**
- **S-8 Asphalt Drum Mixer/Dryer, Astec or equivalent, 135 MMBtu/hr, abated by A-8, Cyclone, Astec or equivalent, and A-9, Baghouse, Astec RBH-76 or equivalent, 76,718 cfm**
- **S-9 Hot Mixed Asphalt Silos (4), 100 ton capacity each, abated by A-8, Cyclone, Astec or equivalent, and A-9, Baghouse, Astec RBH-76 or equivalent, 76,718 cfm, and A-10, Blue Smoke Collection System, Fiber-Bed Mist Eliminator, 16,000 cfm**
- **S-10 Truck Load-Out, abated by A-10, Blue Smoke Collection System, Fiber-Bed Mist Eliminator, 16,000 cfm**
- **S-11 Asphalt Oil Heater, 2 MMBtu/hr**

On September 24, 2004, Dutra Materials submitted this application to build a stationary hot-mix asphalt plant with new equipment capable of processing recycled crumb rubber tires along with conventional asphalt concrete. Many changes have been made to the hot-mix asphalt plant project as a result of the Conditional Use Permit (CUP) process and California Environmental Quality ACT (CEQA) review before the County of Sonoma (County) under File No. PLP04-0046. The County approved a significantly scaled down project, "Revised Project II", in December 2010, as summarized in the following table.

	Original Project submitted on September 24, 2004 to BAAQMD	Original Project submitted in April 2004 to County of Sonoma	Revised Project I Sept. 2009	Revised Project II Dec. 2010
Maximum Asphalt Silos Height (feet.)	76	76	62	62
Asphalt Production (ton/yr) Peak Production (ton/hr)	880,000 400	665,000 400	225,000 300	225,000 300
Sand, Aggregate, Recycled Materials Export (ton/yr)	0	289,175	439,175	345,425
Raw Aggregate and Sand Import by Barge Dock (ton)	425,000 & 75,000	425,000 & 75,000	425,000 & 75,000	Eliminated [1]
Recycled Asphalt Product (RAP, ton/yr)	0	250,000	150,000	56,260

On-Site Crushing Recycled Materials (ton/yr)	0	150,000	Eliminated	Eliminated
Offloading Barge Dock (barge/yr)	125	125	125	Eliminated [1]
Trucks per day	343	250	250	250
Number of Stockpiles	9	9	6	6
Number of Silos	3	4	2	2
Stockpiles Areas (acre)	2.45	2.45	2.45	2.45

[1]Aggregate and sand will be imported by Shamrock from the adjacent existing barge off-loading facility and brought to Dutra by conveyors. Trucking of materials to the site shall be permitted for an interim period of three years to allow for the construction of the conveyor system.

The first project revision approved by the County in September 2009 was to eliminate all on-site recycling and crushing operations, the reuse of the recycling area for vehicle and equipment storage, a 25% reduction in peak asphalt production and an 18% reduction in the height of the asphalt storage silos.

The second project revision approved by the County in December 2010 was to eliminate the new barge facilities and acquire aggregates and sand through the Shamrock Materials facilities at 210-222 Landing Way in Petaluma, California.

Dutra's proposed production, as approved by the County, is now a maximum of 225,000 tons/yr of total asphalt, and no more than 10% wet rubber production. This would translate to 25,000 tons/yr of rubberized asphalt at this facility.

Original Plant Shutdown and Temporary Plant:

Dutra Materials applied to permit a new Asphalt Plant in April 2004 with the County of Sonoma in order to replace its old plant (Plant # 3992 shut down partially on October 23, 2005).

While waiting for the County's approval of the new plant, Dutra Materials lost its lease for part of the property at Plant # 3992. The existing permitted equipment was too old to relocate to the other side of the property, where the lease had not expired. As an alternative solution, Dutra Materials shut down part of the old hot mix asphalt operation and brought in a temporary, portable asphalt hot mix (parallel flow) plant so that it could maintain its production contract at a maximum of 169,477 tons/yr or 1,400 ton/day of total asphalt concrete, and no rubberized asphalt production.

On September 7, 2005, the District granted an Authority to Construct to Dutra Materials for the temporary asphalt hot mix plant with the following portable equipment at the existing location, 1600 South Petaluma Blvd. under Application # 13120:

S-55 Aggregate & Reclaimed Asphalt Pavement Bins (5)
S-56 Aggregate & Reclaimed Asphalt Pavement Conveyors
S-57 Aggregate Screen
S-58 Asphalt Rotary Drum Mixer/Dryer, Astec, 72 MMBtu/hr, abated by A-58, Baghouse, Astec PBH-50, 50,000 cfm
S-59 Hot Mixed Asphalt Silos (2)
S-60 Truck Load-Out
S-61 Asphalt Oil Tank, 30,000 gallons capacity
S-62 Asphalt Oil Heater, 2 MMBtu/hr. (exempt source)

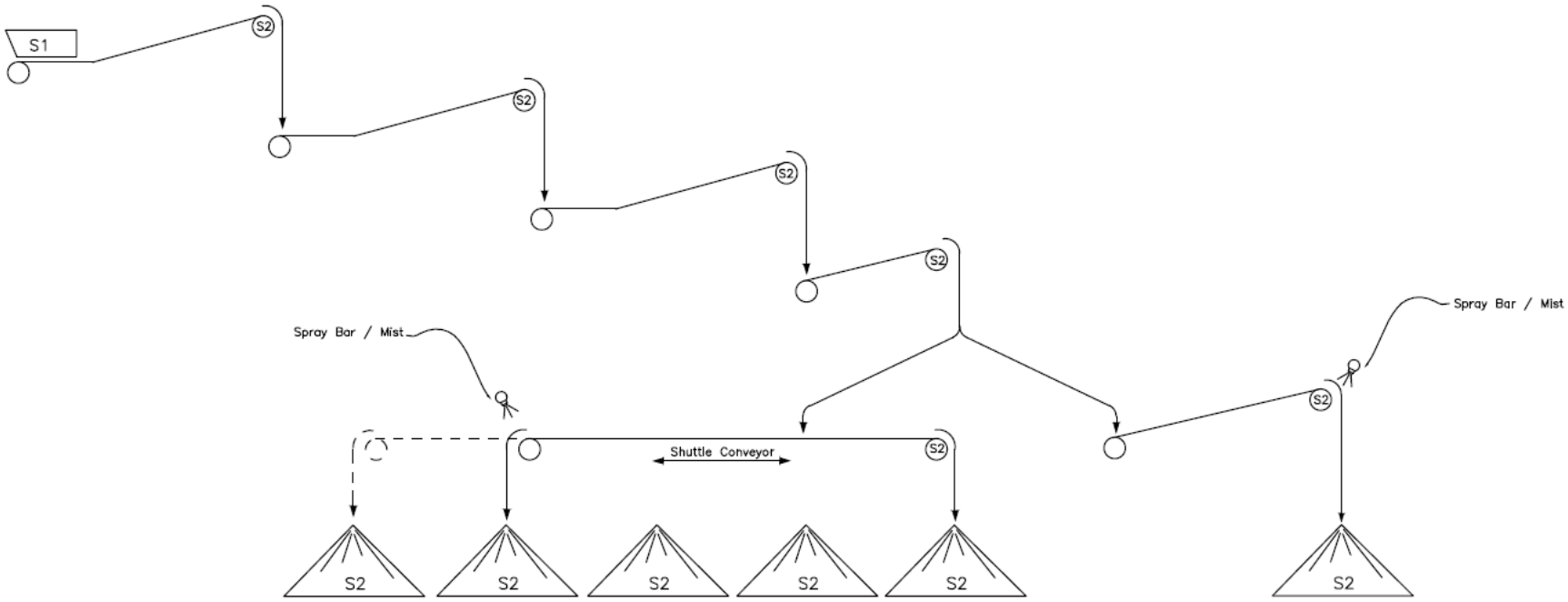
Dutra Materials also used the following existing permitted equipment along with the above temporary portable equipment, including barges, to transport the sand and aggregate materials from a sand dredging area in the Sacramento River near Pittsburg to Petaluma:

S-51 Conveyor system
S-52 Temporary aggregate stockpiles
S-53 Trucks to load
S-54 Permanent aggregate stockpiles

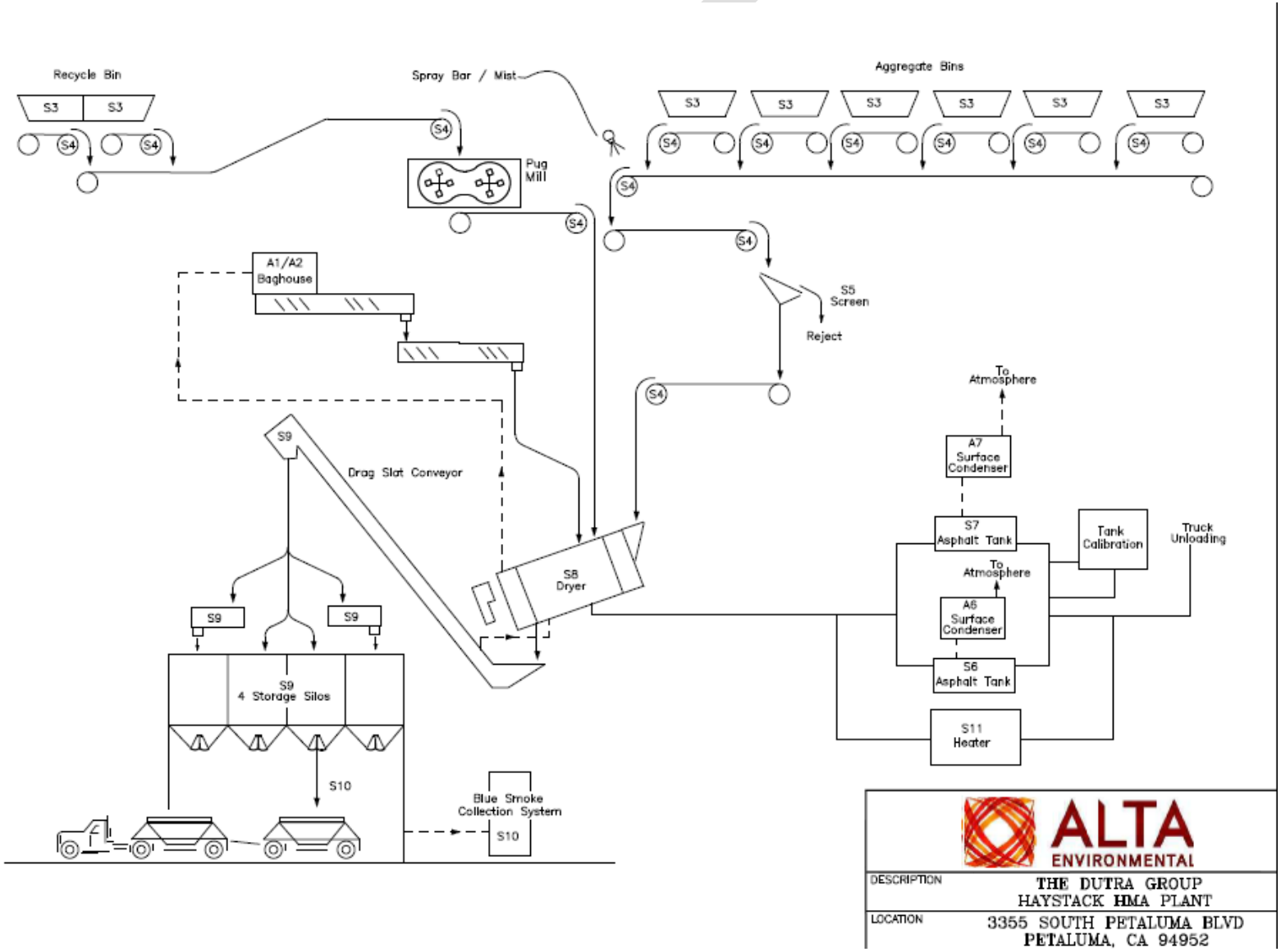
Dutra received the Authority to Construct on September 7, 2005. Dutra failed to notify the District of start-up and never received a permit to operate for the temporary plant before it was shutdown. The temporary plant was shut down in May 2006 and the original plant was fully shut down on November 8, 2007.

New Plant Design:
The process flow diagram of Dutra Materials' proposed asphalt plant is shown below:

S-1 Conveyors and S-2 Stockpiles



S-8 Drum Mixer and Sources S-3 through S-11



For this application, the final material throughput and truck trips are summarized on Tables 1 and 2 below:

Table 1 – Import (Material Throughput & Truck Trips)

Description	Amount	Mode	Capacity	In	Out	Total
Aggregate	Eliminated	Barge				
Sand	Eliminated	Barge				
Aggregate Sand	425,000 75,000 tons/yr	Truck	23 tons	18,478 3,261	18,478 3,261	36,956 6,522
Crumb Rubber	675 tons/yr	Truck	23 tons	29	29	58
Recycled Asphalt & concrete	56,250 tons/yr	Truck	23 tons	2,446	2,446	4,892
Water Tank	3,250,000 gals/yr	Tanker Truck	10,000 gals	325	325	650
Asphalt Oil	3,172,000 gals/yr	Tanker Truck	10,000 gals	317	317	634
Total				24,856	24,856	49,712

Table 2 – Export (Material Throughput & Truck Trips)

Description	Amount	Mode	Capacity	In	Out	Total
Aggregate	302,050 tons/yr	Truck	12 tons	25,1771	25,171	50,342
Sand	43,375 tons/yr	Truck	12 tons	3,615	3,615	7,230
Asphalt	225,000 tons/yr	Truck	12 tons	18,750	18,750	37,500
Total				47,536	47,536	95,072

Combined Annual			144,785
Combined Daily (average)			397
Combined Daily Maximum (in + out) per CEQA			500

II. EMISSIONS CALCULATIONS

S-1 Aggregate and Sand Offloading System by Enclosed Conveyors or Trucks
Basis:

- Equation for uncontrolled PM_{10} emissions for Aggregate Handling and Storage Piles used is in AP-42, Section 13.2.4 (dated 11/06).
- 70% of control efficiency is assumed for PM_{10} emissions at the conveyor system because water spray will be used when necessary.

$E = k(0.0032)\ [U/5]^{1.3}/[M/2]^{1.4} = 0.35 \text{ X } 0.0032\ [8/5]^{1..3} / [4/2]^{1.4} = 0.00078$ lb/ton PM_{10}
or = 0.000118 lb/ton of $PM_{2.5}$ per transfer point
E = particulate emissions 10 microns size
k= particle size multiplier = 0.35 PM_{10}
k = particle size multiplier = 0.053 $PM_{2.5}$
U = mean wind speed = 8 mile/hr
M = moisture content = 4%

S-1 Emission from enclosed conveyors
Maximum Annual PM_{10} throughput = 500,000 ton/yr x 0.00078 lb/ton x 6 transfer points x (1-0.7) = 704 lb/yr

Maximum Daily PM_{10} throughput = 4,000 ton/day x 0.00078 lb/ton x 6 transfer points x (1-0.7) = 5.63 lb PM_{10}/highest day

Maximum Annual $PM_{2.5}$ throughput = 500,000 ton/yr x 0.000118 lb/ton x 6 transfer points x (1-0.7) = 107 lb/yr
Maximum Daily $PM_{2.5}$ throughput = 4,000 ton/day x 0.000118 lb/ton x 6 transfer points x (1-0.7) = 0.85 lb $PM_{2.5}$/highest day

S-1 Emission from trucks (dust from onsite paved road - round trip)

- PM_{10} emissions factors from the truck traffic on the paved roads within the plant are calculated from AP-42 Sections 13.2.1 (11/06).
- There will be chemical suppressant sprayed on the unpaved road and the control efficiency is assumed to be 70%.

$E = k[s/12]^a[W/3]^b = 1.5\ [7.1/12]^{0.9} \times [23/3]^{0.45} = 2.34$ lb PM_{10}/VMT and 0.23 lb $PM_{2.5}$/VMT
PM_{10} k= particle size multiplier = 1.5 lb/VMT (vehicle mile traveled) from Table 13.2.2-2
$PM_{2.5}$ k= particle size multiplier = 0.15 lb/VMT (vehicle mile traveled) from Table 13.2.2-2
s = road surface silt loading = 7.1for material storage at sand and gravel processing, Table 13.2.2-1
a and b = empirical constant from Table 13.2.2-2
W = Average weight (ton) of travel vehicle the road = 23 tons
VMT per trip = 0.143 mile of paved road
Aggregate and Sand = 500,000 tons/yr
Maximum Number of trip (in+out) per day = 348 trips/day
Maximum trip per year = 500,000 ton/yr / 23 ton/truck x 2 = 43,478 trips/yr for in and out

Maximum Daily PM_{10} Emissions = 2.34 lb/VMT x 348 trip/day x 0.143 mile/trip x (1-0.7) = 34.9 lb/day
Maximum Annual PM_{10} Emissions = 2.34 lb/VMT x 43,478 trip/yr x 0.143 mile/trip x (1-0.7) = 4,363 lb/yr

Maximum Daily $PM_{2.5}$ Emissions =0.10 lb/VMT x 348 trip/day x 0.143 mile/trip x (1-0.7) = 3.49 lb/day
Maximum Annual $PM_{2.5}$ Emissions = 0.10 lb/VMT x 43,478 trip/yr x 0.143 mile/trip x (1-0.7) = 436.28 lb/yr

S-2 Aggregate and Reclaimed Asphalt Stockpiles (6) Emissions
Basis:

- The current Permit Handbook Chapter on Crushing and Grinding has a factor of 1.7 lb/acre/day.
- S-2 occupies 2.45 acres.

S-2 Aggregate Storage Piles
Annual Emissions = 1.7 lb/acre/day x 2.45 acre x 260 day/yr x 70% control= 324.87 lb/yr PM_{10}

Daily Emissions = 1.7 lb/acre/day x 2.45 acre x 70% control = 1.25 lb/day PM_{10}

S-3 Aggregate and Reclaimed Asphalt Pavement Bins (7) Emissions
Basis:

- Same emission factors as S-1.

S-3 Aggregate Loading/Handling operation:
Maximum Annual PM_{10} Emissions = 225,000 ton/yr x 0.00078 lb/ton x 6 transfer points x (1-0.7) = 316.6 lb/yr
Maximum Daily PM_{10} Emissions = 4,000 ton/day x 0.00078 lb/ton x 6 transfer points x (1-0.7) = 5.6 lb PM_{10}/highest day

Maximum Annual $PM_{2.5}$ Emissions = 225,000 ton/yr x 0.000118 lb/ton x 6 transfer points x (1-0.7*)* = 47.95 lb/yr
Maximum Daily $PM_{2.5}$ Emissions = 4,000 ton/day x 0.000118 lb/ton x 6 transfer points x (1-0.7) = 0.85 lb $PM_{2.5}$ /highest day

S-4 Aggregate and Reclaimed Asphalt Pavement Conveyors
Basis:

- Emission factor for controlled PM_{10} emissions for Crush Stone Processing and Pulverized Mineral Processing is used from AP-42, Table 11.19.2-2 (dated 8/04).
- Conveyors are abated by the water spray system.
- Operating times are 260 day/yr, 10 hours/day.
- 225,000 ton/yr x 94% = 211,500 ton/yr throughput, where 94% of the asphalt production is aggregate and sand.

S-4 Emission from conveyors
Maximum Annual PM_{10} Emissions = 211,500 ton/yr x 0.000046 lb/ton x 4 transfers = 38.92 lb/yr
Maximum Daily PM_{10} Emissions = 4,000 ton/day x 0.000046 lb/ton x 4 transfers = 0.736 lb PM_{10}/highest day

Maximum Annual $PM_{2.5}$ Emissions = 211,500 ton/yr x 0.000015 lb/ton x 4 transfers = 12.69 lb/yr
Maximum Daily $PM_{2.5}$ Emissions = 4,000 ton/day x 0.000015 lb/ton x 4 transfers = 0.24 lb PM2.5/highest day

S-5 Aggregate Screen
Basis:

- Equation for uncontrolled PM_{10} emissions for Crush Stone Processing and Pulverized Mineral Processing used is in AP-42, Table 11.19.2-2 (dated 1/95).
- Controlled emission factor is used because the moisture in the material is between 0.55 % and 2.88%.

S-5 Emission from screening
Maximum Annual PM_{10} Emissions = 211,500 ton/yr x 0.00074 lb/ton = 156.51 lb/yr
Maximum Daily PM_{10} Emissions = 4,000 ton/day x 0.00074 lb/ton = 2.96 lb PM_{10}/highest day

Maximum Annual $PM_{2.5}$ Emissions = 211,500 ton/yr x 0.00005 lb/ton = 10.58 lb/yr

Maximum Daily $PM_{2.5}$ Emissions = 4,000 ton/day x 0.00005 lb/ton = 0.20 lb $PM_{2.5}$ /highest day

S-6 and S-7, Asphalt Oil Tanks
Basis:

- EPA Tanks Program 4.0 is used to calculate the oil tanks with 3,225,000 gallons per year and a vapor pressure of 0.0008 psia.
- Total emission loss is 18 lb/yr for both tank (See attached TANKS 4.09d calculation).

S-8, Asphalt Drum Mixer/Dryer abated by Cyclone, A-1, and Baghouse, A-2
Basis:

- The baghouse is guaranteed to meet 0.005 grains/dscf by the vendor (BACT level).
- Maximum operating hour = 10 hrs/day, 5 days/wk, 52 wks/yr = 2600 hr/yr.
- Maximum CFM = 76,718 cfm.

Combustion Emissions:
Basis:

- SO2 was based on EPA, AP-42 factors (Table 11.1-7) for natural gas combustion drum mix hot asphalt plant, dated 2/04.
- NOx was based on BACT level of 33 ppmv @ 3% O2 (0.040 lb NOx/MMBtu) based on SCAQMD BACT "achieved in practice".
- CO was based on the new BACT level of 150 ppmv @ 3% O2 (0.111 lb CO/MMBtu) from a vendor guarantee under Application 26584 DeSilva Gates.
- PM_{10} was based on a BACT - limit of 0.005 grains/dscf from a vendor guarantee under Application 26584 DeSilva Gates.
- POC was based on the new BACT level of 0.015 lb/ton provided by the manufacturer, and is based on stack test data from similar plants in SCAQMD under Application 26584 DeSilva Gates.
- Heat capacity = 1050 MMBtu/10^6 ft^3 natural gas.
- Heat Input = 135 MMBtu/hr X 2600 hr/yr = 351,000 MMBtu/yr.

NOx = (0.040 lb/MMBtu)(351,000 MMBtu/yr) = 14,040 lb/yr or 7.02 ton/yr
CO = (0.111 lb/MMBtu)(351,000 MMBtu/yr) = 38,961 lb/yr or 19.48 ton/yr
SO_2 = (0.0034 lb/ MMBtu)(351,000 MMBtu/yr) = 1,193 lb/yr or 0.60 ton/yr
PM_{10} = 0.005 grain/dscfm x 76,718 cfm x 60 min/hr x 2600 hr/yr / [7000 grain/lb] = 8,549 lb/yr or 4.27 ton/yr
POC = (0.015 lb/ton)(225,000 ton/yr) = 3,375 lb/yr or 1.69 ton/yr

S-9 Hot Mixed Asphalt Silos (4)
Basis:

- Equation for total organic (TOC), PM and CO emissions for silo filling used is in AP-42, Table 11.1-14 (dated 3/04).
- T= 325^0F.
- V= -0.5 asphalt volatility.
- Throughput = 225,000 tons/yr and 3,000 ton/day.
- Abatement control = 95% by A-8 cyclone and A-9 baghouse.

TOC = 0.0504 (-V) exp [(0.0251)(T+460)-20.43] = 0.01219 lb TOC/ton asphalt
Annual throughput = 225,000 ton/yr x 0.0122 lb/ton = 2,742 lb/yr or 1.37 tpy
Daily throughput = 3,000 ton/day x 0.01219 lb/ton = 36.56 lb TOC/highest day

PM = 0.000332 + 0.00105 (-V) exp [(0.0251)(T+460)-20.43] = 0.00059 lb Organic PM/ton
Annual throughput = 225,000 ton/yr x 0.00059 lb/ton x (1-0.95) = 6.59 lb/yr or 0.0659 tpy
Daily throughput = 3,000 ton/day x 0.00059 lb/ton x (1-0.95) = 0.088 lb PM/highest day

Organic PM = 0.00105 (-V) exp [(0.0251)(T+460)-20.43] = 0.00025 lb PM/ton
Annual throughput = 225,000 ton/yr x 0.00025 lb/ton x (1-0.95) = 2.86 lb/yr or 0.0286 tpy
Daily throughput = 3,000 ton/day x 0.000585 lb/ton x (1-0.95) = 0.038 lb PM/highest day

CO = 0.00488(-V) exp [(0.0251)(T+460)-20.43] = 0.00118 lb PM/ton
Annual throughput = 225,000 ton/yr x 0.00118 lb/ton = 265.50 lb/yr or 0.133 tpy
Daily throughput = 3,000 ton/day x 0.00118 lb/ton = 3.54 lb CO/highest day

S-10 Truck Load-Out
Basis:

- Equation for total organic, PM and CO emissions for silo filling used is in AP-42, Table 11.1-14 (dated 3/04).
- T= 325^0F.
- V= -0.5 asphalt volatility.
- Throughput = 225,000 tons/yr and 3,000 ton/day.
- Abatement control = 90% by Blue Smoke for POC and PM_{10}.

TOC = 0.0172 (-V) exp [(0.0251)(T+460)-20.43] = 0.00416 lb TOC/ton asphalt
Annual throughput = 225,000 ton/yr x 0.00416 lb/ton x (1-0.9) = 93.58 lb/yr or 0.0468 tpy
Daily throughput = 3,000 ton/day x 0.00416 lb/ton x (1-0.9) = 1.25 lb TOC/highest day

PM = 0.000181 + 0.00141 (-V) exp [(0.0251)(T+460)-20.43] = 0.000522 lb PM/ton
Annual throughput = 225,000 ton/yr x 0.000522 lb/ton x (1-0.9) = 11.74 lb/yr or 0.0059 tpy
Daily throughput = 3,000 ton/day x 0.000522 lb/ton x (1-0.9) = 0.16 lb PM/highest day

Organic PM = 0.00141 (-V) exp [(0.0251)(T+460)-20.43] = 0.00034 lb PM/ton
Annual throughput = 225,000 ton/yr x 0.000522 lb/ton x (1-0.9) = 7.67 lb/yr or 0.0038 tpy
Daily throughput = 3,000 ton/day x 0.000522 lb/ton x (1-0.9) = 0.10 lb PM/highest day

CO = 0.00588(-V) exp [(0.0251)(T+460)-20.43] = 0.00142 lb CO/ton
Annual throughput = 225,000 ton/yr x 0.00142 lb/ton = 319.90 lb/yr or 0.16 tpy
Daily throughput = 3,000 ton/day x 0.00142 lb/ton = 4.27 lb CO/highest day

Hot Mix Truck Loadout (Yard Emissions)
POC following Loadout = 0.0011 lb/ton x 225,000 ton/yr = 247.5 lb/yr or 0.124 ton/yr
= 0.0011 lb/ton x 3,000 ton/day = 3.3 lb/day

CO following Loadout = 0.32 POC = 0.32 x 247.5 lb/yr = 79.2 lb/yr or 0.0396 tpy
= 0.32 x 4.4 lb/day = 1.06 lb/day

S-11 Asphalt Oil Heater, 2 MMBtu/hr
S-11 is exempt from permit requirements per Regulation 2-1-114.1.1 for boilers with less than 10 million BTU per hour rated heat input if fired exclusively with natural gas. Therefore, the emissions will not be calculated and accounted for this exempt source. In addition, the process heater does not need to be registered by the District since it is not above 2 MM Btu/hr.

Total Emissions from this application

Sources	Daily Emissions	Annual Emissions	Emission Increases
S-1 (conveyors + Trucks)		40.53 lb/day PM_{10}	5,066 lb/yr
PM_{10}	2.53 tpy PM_{10}		
	4.34 lb/day $PM_{2.5}$	542.83 lb/yr $PM_{2.5}$	0.2714 tpy
$PM_{2.5}$			
S-2	1.25 lb/day PM_{10}	325 lb/yr PM_{10}	0.162 tpyPM_{10}
S-3	5.63 lb/day PM_{10}	317 lb/yr PM_{10}	0.158 tpy PM_{10}
	0.85 lb/day $PM_{2.5}$	48 lb/yr $PM_{2.5}$	0.024 tpy $PM_{2.5}$
S-4	0.74 lb/day PM_{10}	38.92 lb/yr PM_{10}	0.019 tpy PM_{10}
	0.24 lb/day $PM_{2.5}$	12.69 lb/yr $PM_{2.5}$	0.006 tpy$PM_{2.5}$
S-5	2.96 lb/day PM_{10}	156.5 lb/yr PM_{10}	0.078 tpy PM_{10}
	0.20 lb/day $PM_{2.5}$	10.58 lb/yr $PM_{2.5}$	0.0053 tpy
$PM_{2.5}$			
S-6	0.035 lb/day POC	9.0 lb/yr POC	0.0045 tpy POC
S-7	0.035 lb/day POC	9.0 lb/yr POC	0.0045 tpy POC
S-8			
Combustion	54.0 lb/day NOx	14,040 lb/yr NOx	7.02 tpy NOx
Included with S-8	149.85 lb/day CO	38,961 lb/yr CO	19.48 tpy CO
	45 lb/day POC	3,375 lb/yr POC	1.69 tpy POC
	4.59 lb/day SO2	1,193 lb/yr SO2	0.60 tpy SO2
	32.88 lb/day PM_{10}	8,549 lb/yr PM_{10}	4.27 tpy PM_{10}
S-9	0.09 lb/day PM	6.59 lb/yr PM	0.0033 tpy PM
PM organic	0.04 lb/day PM organic	2.86 lb/yr PM organic	0.0014 tpy PM
PM_{10}[1]	0.076 lb/day PM_{10}	5.67 lb/yr PM_{10}	0.0028 tpy PM_{10}
TOC (assume as POC)	36.56 lb/day POC	2,742 lb/yr POC	1.37 tpy POC
CO	3.54 lb/day CO	265.5 lb/yr CO	0.133tpy CO
S-10	0.16 lb/day PM	11.74 lb/yr PM	0.0059 tpy PM
PM organic	0.10 lb/day PM organic	7.67 lb/yr PM organic	0.0038 tpy PM
PM_{10}[1]	0.15 lb/day PM_{10}	11.65 lb/yr PM_{10}	0.0058 tpy PM_{10}
TOC (assume as POC)	4.55 lb/day POC	341.08 lb/yr POC	0.17 tpy POC
CO	5.32 lb/day CO	399.1 lb/yr CO	0.20 tpy CO

Totals: 7.02 tpy NOx 0.60 tpy SO2 19.81 tpy CO 3.15 tpy POC
0.014 tpy PM + PM organic 7.235 tpy PM_{10} 0.307 tpy PM2.5
Note1: Assume 60% of PM + PM organic is PM_{10}

III. PLANT CUMULATIVE INCREASE SINCE 4/5/91

		Current (ton/yr)	+ New (ton/yr)	= New Total (ton/yr)
NPOC	=	0.00	0.00	0.00
NOx	=	0.00	7.02	7.02
SO_2	=	0.00	0.60	0.60
CO	=	0.00	19.81	19.81
POC	=	0.00	3.15	3.15
PM	=	0.00	0.014	0.014
PM_{10}	=	0.00	7.235	7.235
PM2.5	=	0.00	0.307	0.307

IV. TOXIC SCREENING ANALYSIS

District Regulation 2-5, the Air District's New Source Review requirements for Toxic Air Contaminants (TACs), regulates the amount of toxic risk that a new or modified source can generate for nearby receptors. Regulation 2-5-301 provides that if the health risk to surrounding receptors created by the new or modified source exceeds certain specified thresholds, then the applicant needs to use Best Available Control Technology for Toxics (TBACT) to minimize that toxic risk. Regulation 2-5-302 further provides that if the health risk to surrounding receptors still exceeds certain specified thresholds, even after installing TBACT, then the District may deny the permit issuance.

These provisions provide different types of health risk thresholds for different types of toxic risk concerns. For TACs that are cancer-causing, the risk thresholds are specified in terms of the additional cancer cases that would be expected to result from the source out of a population of one million people exposed to that source's emissions over a 70-year period. For TACs that involve non-carcinogenic health risks, the thresholds are specified in terms of a "Hazard Index," which is a ratio that compares the exposure level that will result from the source to the exposure level at which adverse health impacts begin to occur. The exposure level at which adverse health impacts begin to occur is established by the California Office of Environmental Health Hazard Assessment (OEHHA) based on scientific studies, and with a built-in conservative margin for error. Thus, for example, if a source will expose surrounding receptors to half of the level set by OEHHA, the HI for that source is 0.5. If a source will expose surrounding receptors to twice the level set by OEHHA, the HI for that source is 2. In addition, for non-carcinogenic risk, an HI risk number is calculated for both short-term or acute exposures and for long-term or chronic exposures.

The risk thresholds set forth in Regulation 2-5 are as follows. If a source will result in a carcinogenic risk of more than one additional cancer in a population of one million, or an acute or chronic HI of over 0.2, then the source must apply TBACT to control TACs emissions. If a project will result in a carcinogenic risk of more than 10 additional cancers in a population of one million, or an acute or chronic HI of over 1, then generally the source cannot be permitted, regardless of whether it will use TBACT. The Air District will deny the Authority to Construct.

Applying these toxic risk thresholds under Regulation 2-5 requires a Health Risk Analysis (HRA) to evaluate the toxic risk created by the project's TAC emissions on surrounding receptors. An HRA is required for all sources that emit TACs at levels exceeding the *de minimis* thresholds set forth in Table 2-5-1 in Regulation 2-5.

EPA document AP-42, Chapter 11.1, Tables 11.1-15 and 11.1-16 provide emission factors for toxic pollutants emitted from silo filling and silo load-out operations. Appendix B contains the calculations for the toxic air contaminants from the new asphalt drum plant. The following TACs exceed the District trigger levels in Table 2-5-1 and thus an HRA was completed.

Toxic Pollutant	Emissions		Trigger Levels	
	Hourly (lb/hr)	Annual (lb/yr)	Acute (lb/hr)	Chronic (lb/yr)
Benzene	0.118	**87.81**	2.9	3.8
Ethyl Benzene	0.074	**55.37**	NA	43
Formaldehyde	**0.955**	**716.52**	0.12	18
Naphthalene	0.021	**16.05**	NA	3.2
Arsenic	0.00004	**0.032**	0.00044	0.0072
Cadmium	0.0001	**0.072**	NA	0.026
Chromium Hexavalent	0.0001	**0.079**	NA	0.00077
Nickel	**0.0148**	**11.08**	**0.0013**	0.43

As discussed in the background section, the owner/operator originally submitted the application with a higher production rate. Throughout the CEQA and County approval process, the scope changed and the final production rate is now 225,000 tons of asphalt per year. The proposed project also passed a District HRA (August 26, 2015), which studied the final project to be permitted by the District (stationary sources only) as approved by the County. The maximum cancer risk is estimated at 0.74 in a million for nearby residents. The chronic non-hazard index is 0.019 for nearby residents. The acute non-hazard index is 0.22 for nearby residents. (See August 26, 2015 memo from Toxics Section.) In accordance with the District's Regulation 2-5, these risk levels are considered acceptable and TBACT is not required.

V. BEST AVAILABLE CONTROL TECHNOLOGY

Regulation 2-1-301 requires that any new or modified source that has the potential to emit 10 pounds or more per day of POC, NPOC, NOx, SO_2, PM_{10} or CO is required to use Best Available Control Technology (BACT) to control emissions. BACT is defined in Regulation 2-2-206 as follows:

For any new or modified source, except cargo carriers, the more stringent of:

206.1 The most effective emission control device or technique which has been successfully utilized for the type of equipment comprising such a source; or

206.2 The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or

206.3 Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or

206.4 The most effective emission control limitation for the type of equipment comprising such a source which the EPA states, prior to or during the public comment period, is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable. Under no circumstances shall the emission control required be less stringent than the emission control required by any applicable provision of federal, state or District laws, rules or regulations.

The APCO shall publish and periodically update a BACT/TBACT Workbook specifying the requirements for commonly permitted sources. BACT will be determined for a source by using the workbook as a guidance document or, on a case-by-case basis, using the most stringent definition of this Section 2-2-206.

Applying BACT under this definition therefore involves a 2-part analysis for each source. First, the most effective emission control device or technique or emission limitation that has been used on that type of source must be determined. An emission limitation or control device or technique that has been successfully used on that type of source at another facility is referred to as "achieved in practice." If a type of control equipment, or a numerical emission limitation, has been achieved in practice at another operation of the same type, Air District Regulation 2-2-301 requires that it be used on the source under review. This level of emission control is also referred to as the "BACT 2" level of control. Second, any more stringent emission control device or technique that is technologically feasible and cost-effective must be determined. Even if no similar facility has yet been required to install this more stringent level of emission control, it is still required as BACT under Regulation 2-2-301 if it is technologically feasible to use at the source and it can reduce the source's emissions in a cost-effective manner. This level of emission control is referred to as "technologically feasible/cost-effective BACT" or "BACT 1."

The following discussion outlines how the BACT requirement applies to Dutra's proposed new sources.

Sources S-1 through S-5 (Off Loading System, Conveyors, Storage Piles, Bins and Screen) abated by water spray.

Sources S-1 through S-5 are equipped with water sprays as an abatement device; therefore, their emissions are less than 10 lb PM_{10}/highest day. As a result these sources do not trigger BACT per Regulation 2-2-301 for PM_{10}.

Sources S-6 and S-7 (Asphalt Oil Tanks) abated by Surface Condenser A-6 and A-7

Sources S-6 and S-7 are equipped with surface condenser A-6 and A-7 as abatement devices; therefore, their emissions are less than 10 lb POC/highest day. As a result these sources do not trigger BACT per Regulation 2-2-301 for POC.

Source S-8 Drum Mixer abated by A-1 Cyclone and A-2 Baghouse

Source S-8 Drum Mixer triggers BACT per Regulation 2-2-301 for NOx, POC, PM_{10} and CO because these emissions exceed 10 lb/highest day.

The Air District first surveyed other similar facilities to determine the BACT 2 level of control for sources similar to the S-8 Drum Mixer. The most recent such facility permitted was for DeSilva Gates Construction in May 2015 under Application No. 26584 for construction of an asphalt plant very similar to that of Dutra's proposed project. For the DeSilva Gates application, the District determined that BACT 2 for PM_{10} entails

using a cyclone and baghouse with emissions not to exceed 0.005 gr/dscf. This new limit was guaranteed by Astec Inc., the same manufacturer of the proposed baghouse at Dutra Materials. The District's current BACT Workbook Document # 10A.1 contains a limit of 0.01 gr/sdcf for PM_{10} emissions at "Hot Mix Asphalt, Drum Mix Facilities" but this has not been updated since the new BACT 2 limit (0.005 gr/dscf) was established in Application No. 26584, and will be verified.

CO will be limited to 150 ppmvd @ 3% O2 as permitted in the DeSilva Gates Construction, which is a reduction from 400 ppmvd @ 3% O2 provided in the current District BACT Workbook Document #10A.1 that has not yet been updated.

The most current BACT 2 limit for NOx limit is 33 ppmv @ 3% O2 as specified in the current SCAQMD BACT "achieved in practice". According to SCAQMD, the BACT 2 limit of 33 ppmvd NOx @ 3% O2 can only be achieved by using clean aggregates that do not contain any nitrate.

BACT 2 for SO_2 involves firing solely with natural gas, as achieved in practice per District BACT Workbook document #10A.1.

This application is required to meet an achieved in practice BACT 2 limit for POC of 0.015 lb/ton, capable with the following controls:

a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system or vented to a blue smoke filter pack.
b) Truck load-out operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack with an overall 90% reduction efficiency

The Air District did not locate (within its jurisdiction or others) any other similar facilities that are achieving more stringent limits for PM_{10}, CO, NOx, SO_2 and POC than are included in the DeSilva Gates permit. Below is a summary of BACT 2 limits for drum mix emissions of NOx, CO, PM_{10}, SO2 and POC that were identified. The BAAQMD has the most stringent limits for NOx, CO, and PM_{10}, as seen in a comparison table below.

BACT Determinations for Rotary Drum Mixers at Asphalt Plants

Agency, Date (Plant)	Size & Production Rate	NOx	CO	PM_{10}	SO2	POC
BAAQMD, 2015 (De Silva Construction)	125 MMBtu/hr, 750 tons/hr	33 ppmvd at 3%O2	150 ppmvd at 3% O2	0.005 gr/dscf	Natural gas	0.015 lb/ton
BAAQMD, 2001(current BACT 2 per BACT Workbook)	All	12 ppmvd at 15% 02 (36 ppmvd at 3% O2)	133 ppmvd at 15% O2 (400 ppmvd at 3% O2)	Equal or less than 0.01 gr/dscf	Natural gas	Not specified

BACT 1		None identified	None identified	None identified	None identified	Afterburner greater or equal to 0.3 second retention time at 1400 F or greater
SCAQMD, 2003 (Blue Diamond Division of Sully Miller Contracting)	175 MMBtu/hr, 600 tph	33 ppmvd @ 3%O2		0.066 gr/dscf		
Yolo/Solano AQMD, 2001 (Granite Construction)	135 MMBtu/hr, 450 tph	0.088 lb/MMBtu low NOx burner and flue gas recirculation	0.412 lb/MMBtu low NOx burner and flue gas recirculation			
SJVUAPCD, 2001	> 75.6 MMBtu/hr, >2000 tpy	0.088 lb/MMBtu low NOx burner and natural gas or LPG primary fuel	Natural gas LPG as primary fuel	99% control efficiency and enclosed conveyors and silos	PUC quality natural gas or LPG as primary fuel	Natural gas or LPG as primary fuel and enclosed hot mix silos and loadout

Thus, BACT 2 limits for Source S-8 are as follows:
PM_{10}: 0.005 gr/dscf
CO: 150 ppmvd at 3% O_2
NOx: 33 ppmvd at 3% O_2
SO_2: firing solely with natural gas
POC: 0.015 lb/ton

The Air District also evaluated whether there are any more stringent controls that are technologically feasible and cost-effective under BACT 1 for NOx, CO, POC and PM_{10} at Source S-8.

BACT 1 for NOx has not been determined in the District BACT Workbook. The two-post-combustion techniques that present the greatest likelihood of successful NOx reduction from the Drum Mixer S-8 exhaust are selective non-catalytic reduction (SNCR) and selective reduction (SCR). Both SNCR and SCR utilize a reducing agent such as ammonia or urea to convert NOx into molecular nitrogen (N2) and water (H2O). The chemical reactions that accomplish this conversion depend on the reducing agent and the presence of a catalyst. The best temperature at which the reactions occur for SNCR is between 1600-2000 ^{0}F. Thus, SNCR is not technologically feasible and not an effective control technology for the asphalt drum mixer that operates at maximum

temperature between 300-350 ^{0}F. The same applies to an SCR, where best temperature at which the reactions occur is between 570-700 ^{0}F. Thus, SCR is also not technologically feasible for the asphalt drum mixer that operates at a much lower temperature between 300-350 ^{0}F.

BACT 1 for POC is use of an afterburner with retention time greater or equal to 0.3 seconds at a temperature of at least 1400^{0}F. In 2015, DeSilva Gates Construction (Application 26584) obtained vendor quotes for a thermal oxidation system. The proposed total annualized cost of the thermal oxidizer (afterburner) was $1,601,499 based on 36,000 ACFM by Astec, Inc. Dutra Materials would require an afterburner with a higher flow rate than 36,000 ACFM. Thus, the cost of afterburner would be more than $1,601,499. However, we will assume Dutra's afterburner would cost the same as the one proposed by Astec, Inc. for the purpose of this cost analysis.

Cost Effectiveness Summary for Emissions of POC from S-8 abated by A-1 and A-2

	Astec Afterburner Systems Abate S-8 (Mixer)
Total Annualized Costs	$1,601,499 (proposed by Astec, Inc. for DeSilva Gates application)
POC Destruction Efficiency	100% (for conservative estimate)
Inlet POC	1.69 tpy
Cost Effectiveness	$947,632/ton

The cost of these abatement devices exceed the Air District's current $17,500/ton cost-effectiveness threshold and therefore it is not cost effective to implement add-on POC abatement (BACT 1) for S-8 Rotary Drum Mixer abated by A-1 Cyclone and A-2 Baghouse. The Air District will thus impose the BACT 2 limit of 0.015 lb/ton for POC on Source S-8.

In all, the Air District did not identify any additional control devices or techniques that may be available and cost effective to achieve a more stringent level of emissions control than the abatement equipment discussed above in the BACT 2 discussion for PM_{10}, CO, NOx and POC. Thus the Air District will impose the BACT 2 requirements for PM_{10}, CO, NOx and POC discussed above on Source S-8.

Dust from Truck Traffic

PM_{10} emissions from truck traffic at Dutra Materials will be 34.9 lb/day and is therefore subject to BACT. The BACT Workbook Chapter 11 for "Asphalt Batch Plant (Material Handling)" requires water spray for site surfaces for BACT 2. The Air District surveyed other facilities and did not identify any more stringent limits achieved in practice. The Air District also considered whether more stringent controls are technologically feasible and cost effective under BACT 1, but did not identify any such controls. Dutra Materials is conditioned to use of water spray with chemical suppressant on paved surfaces to mitigate PM_{10} and therefore meets the requirements of BACT 2.

S-10 Hot Mix Asphalt Truck Load-Out abated by A-10 Blue Smoke Control System.

The BACT Workbook Document #10B.1 for "Hot Mix Asphalt and Batch Mix Facilities: Material Handling (Conveyors and Storage Silos; and Loadout Operations" requires a three sided enclosed tunnel, and enclosed storage silos, all vented to a blue smoke filter pack as BACT 2 for POC and PM_{10}. BACT 1 has not been determined for

PM_{10}. BACT 1 requires an afterburner for POC. However, installation of the afterburner is not cost effective to abate just S-10 alone, or all three combined sources, S-8 (Mixer), S-9 (Silos) and S-10 (Loadout), as shown below, because the cost exceeds the current BACT 1 cost threshold of $17,500 per ton of POC as shown below. Therefore, S-10 is subject to BACT 2 and will be abated by a blue smoke control system or blue smoke recovery system.

BACT Determinations for Truck Load-out at Asphalt Plants

Agency, Date (Plant)	Drum Size & Production Rate	Blue Smoke (VOC)
SCAQMD, 2003 (Blue Diamond Division of Sully Miller Contracting)	175 MMBtu/hr, 600 tph	Truck Load-out: Enclosed tunnels vented to two-stage filter packs
Yolo/Solano AQMD, 2001 (Granite Construction)	135 MMBtu/hr, 450 tph	Truck Load-out: Blue smoke 2-stage filter pack
SJVUAPCD, 2001	> 75.6 MMBtu/hr, >2000 tpy	Achieved in practice VOC: enclosed hot mix silos and loadout operation vented to the rotary-dryer burner (blue smoke recovery system) Technologically feasible VOC: vented to an afterburner
		Achieved in practice PM_{10}: 99% control efficiency and enclosed conveyors Technologically feasible PM_{10}: enclosed on two sides vented to blue smoke control (electrostatic precipitator or filter pack) and natural gas as a primary fuel

Cost Effectiveness Summary for POC Emissions from S-8 (Mixer), S-9 (Silos) and S-10 (Loadout) assuming abated by the afterburner (BACT 1).

As mentioned above, the proposed total annualized cost of the afterburner was $1,601,499 based on 36,000 ACFM by Astec Inc. Dutra Materials would require an afterburner with a higher flow rate than 36,000 ACFM. Thus, the cost of an afterburner would be more than $1,601,499. However, we will assume Dutra's afterburner would cost the same as the one proposed from Astec, Inc. for the purposes of this cost analysis.

	Astec Afterburner Systems Abate S-8 (Mixer), S-9 (silos) & S-10 (Loadout)
Total Annualized Costs	$1,601,499
POC Destruction Efficiency	100% (for conservative estimate)
Inlet POC	1.873 tpy
Cost Effectiveness	$855,049/ton

VI. OFFSETS

Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NOx per District Regulation 2-2-302, or, for major facilities,

more than 1 ton/yr of SO2 or PM_{10} per District Regulation 2-2-303. The District will provide offsets from the Small Facility Banking Account for a facility with emissions between 10 and 35 tons/yr of POC or NOx, provided that facility has no available offsets and there are sufficient offsets available in the Small Facility Banking Account.

Dutra Materials submitted this application on September 28, 2004 before the shutdown of the old asphalt plant on October 23, 2005 and has requested to receive onsite contemporaneous emission reduction credits (CERCs) for the equipment shutdown. This application was deemed complete on January 19, 2005; therefore Dutra qualifies for CERCs pursuant to District Regulations 2-2-214 and 2-2-605. CERCs are calculated as the average annual emissions from the shutdown equipment from actual throughput and usage of the three years (2002, 2003 and 2004) prior to application completeness per District Regulations 2-2-214, 2-2-605 and 2-2-606, as detailed in Appendix A. After the application was deemed complete, Dutra changed several aspects of the project due to required mitigation of environmental impacts discovered during the project's California Environmental Quality Act (CEQA) review before the County of Sonoma (project changes are detailed in Section I, Background). Changes to the project served to reduce its environmental impacts and are of no fault of the Applicant. After deeming Dutra's application complete on January 19, 2005, the District sent several incomplete letters to Dutra to ensure it had the details of the final Project as approved by the County to review, but the incomplete letters only served as a tool to obtain updated information, not to reset the completion date of the permit application. Therefore, because the project changes served to decrease its scope and reduce its environmental impacts and because the changes were imposed by the lead agency under CEQA and were not the result of any preventable delay by Dutra, the District will retain the original complete date (January 19, 2005) and the available shutdown emission reduction credits are based on the same completion date of the original permit application.

The onsite CERCs are used to offset the emission increases from this new asphalt plant as shown below at a ratio of 1:1. Emissions from PM_{10} and SO2 are each less than 10 tons per year (see table below). Offsets are not required for these pollutants since Dutra Materials is not a Major Facility. Since facility-wide emissions for NOx and POC are also less than 10 tons/yr, offsets are not required per Regulation 2-2-302. More detailed calculations are provided in Appendix A for shutdown equipment.

Emission Increase (Decrease) From This Application

Pollutants	Future Emissions lbs/yr (tpy)	Onsite Reduction Credit lbs/yr (tpy)	Emission lbs/yr / tpy Increase (Decrease)
NOx	14,040 (7.02)	14,405 (7.202)	(365)/(0.183)
SO_2	1,193 (0.60)	528.6 (0.264)	664.77 / 0.33
CO	39,626 (19.81)	228,801 (114.401)	(189,176)/(94.59)
POC	6,476 (3.238)	23,791 (11.895)	(17,483)/(8.74)
PM_{10}	14,469 (7.235)	22,238 (11.119)	(7,769)/(3.88)

VII. STATEMENT OF COMPLIANCE

The owner/operator of S-1, S-2, S-3, S-4, S-5, S-6, S-8, S-9 and S-10 shall comply with Regulation 6-1: Particulate Matter. The owner/operator is not expected to emit any visible emission that exceeds Ringelmann 1.0 or results in fallout on adjacent property in such quantities as to cause public nuisance per Regulation 6-1-301 and Regulation 1-301. S-1 Aggregate Off-Loading System, S-2 Stockpiles, S-3 Aggregate & RAP Bins, S-4 Aggregate & RAP Conveyors and S-5 Screen are expected to comply with Regulation 6-1 since water sprays are used to keep the aggregate in a moist condition. Dust from truck traffic is controlled by chemical suppression spray.

The owner/operator is subject to Regulation 6-1-310, which limits PM_{10} emissions to 0.15 gr/dscf. S-8 Rotary Drum Mixer abated by A-1 Cyclone and A-2 Baghouse is the primary permitted source of particulate emissions and is subject to BACT. BACT limits PM_{10} emissions to 0.005 gr/dscf, which is well below the limit of 0.15 gr/dscf. At the

maximum throughput of 300 tons of material per hour from S-8, the particulate emission into the atmosphere of 3.29 lb/hr of PM_{10} (see emissions calculations) is well below the allowable limit of 40 lb/hr based on Regulation 6-1-311.

In addition, the owner/operator of S-8 Rotary Drum Mixer shall not emit sulfur dioxide in quantities which result in ground level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours as required by Regulation 9-301. Dutra Materials is expected to meet the requirements of Regulation 9 since S-8 shall be fired solely on natural gas.

Public Notice Requirements
This Authority to Construct does not trigger public notice requirements under any Air District regulations. This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412. The nearest public school is 1.66 miles from the project. The project also does not trigger the notice requirements of Air District Regulation 2-2-405 because the operation will not be a "major" facility as defined in Regulation 2-1-204 and does not fall into any of the other categories subject to Regulation 2-2-405.

This Application is subject to public notice requirements under CEQA, as discussed below. The Air District will issue a Notice of Determination under CEQA concurrently with the issuance of the Authority to Construct and provide notice to the public of its intended action.

In addition, although no public comment period is required by Air District or other rules or regulations, the Air District will post its proposed decision on this application and its CEQA findings for public review and comment for 30 days prior to making a final determination on the project.

NSPS
The owner/operator is subject to the Federal NSPS Subpart I for Hot Mix Asphalt Facilities. The owner/operator shall not discharge or cause discharge into the atmosphere from any affected facility any gases which: 1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf); 2) Exhibit 20% opacity, or greater. Dutra Materials will meet the NSPS requirements of Subpart I since S-8 Drum Mixer must meet the BACT limit of 0.005 gr/dscf and the Ringelmann No. 1 Limitation and Opacity Limitation of Regulations 6-1-301 and 6-1-302.

PSD
The federal Prevention of Significant Deterioration (PSD) regulations require a permit before constructing or operating certain major facilities and major modifications to major facilities. The Air District implements this federal permitting program in the Bay Area pursuant to a delegation agreement with EPA. In addition, the Air District's NSR regulations in Regulation 2, Rule 2 contain certain provisions that incorporate PSD elements. Dutra's project is not a new major facility, nor is it a major modification to a major facility under the PSD regulations, and therefore PSD requirements do not apply to this Application.

NESHAPs
The National Emission Standard for Hazardous Air Pollutants (NESHAP) applies to certain sources of certain hazardous air pollutants designated by EPA. Dutra's project is not subject to any NESHAPs.

CEQA Review
The County of Sonoma (County) has plenary land use authority over this project and is the Lead Agency under the California Environmental Quality Act (CEQA) for this

project. An Environmental Impact Report (EIR) for the project was certified by the County on December 14, 2010. The County evaluated all areas of potential environmental impact. The County found that there would be significant and unavoidable impacts in 6 impact areas. However, the County found that there were overriding considerations related to the benefits of the project that outweighed the significant and unavoidable impacts. The County made specific findings based on the EIR that all significant impacts had been eliminated or substantially lessened where feasible, and that any remaining significant impacts were unavoidable and acceptable due to the overriding considerations. The County therefore adopted CEQA Findings and a Statement of Overriding Considerations and approved the project through issuance of a Conditional Use Permit on December 14, 2010. The Conditional Use Permit includes many Conditions of Approval that incorporate the CEQA Mitigation and Monitoring Plan adopted by the County. A copy of the County's approval documents and its final Conditional Use Permit Conditions of Approval can be found in attached Appendix C. The County's actions in approving the project were challenged in court. On February 28, 2014, the Court of Appeal of the State of California affirmed the trial's court ruling that the County's approval was sound.

The Air District is a Responsible Agency under CEQA for the Project. As such, the Air District has carefully reviewed the County's EIR and based on the EIR has made its own findings regarding the project as required by CEQA. The Air District's analysis and findings are outlined in its CEQA Findings, Supporting Facts and Statement of Overriding Considerations document, attached as Appendix D. A detailed summary of the CEQA process for the project can be found in the Air District's CEQA Findings, Supporting Facts and Statement of Overriding Considerations document for the project. The Air District will issue a Notice of Determination regarding the Air District's consideration of CEQA issues concurrently with the issuance of the Authority to Construct for the project. Although no public notice period is required for this Application under Air District regulations, CEQA, or otherwise, the Air District will seek public review and comments on its proposed determination and CEQA findings. The Air District will provide notice to the public regarding this Notice of Determination in accordance with the requirements of CEQA.

VIII. CONDITIONS

Condition # 26122
Permit Condition for Dutra Materials, Plant # 16483, Application # 10901 for the following sources:

- **S-1 Aggregate Off-Loading System, includes only conveyors, abated by A-1 Water Spray System**
- **S-2 Aggregate & Reclaimed Asphalt Stockpiles (6) abated by A-2 Water Spray System**
- **S-3 Aggregate & Reclaimed Asphalt Pavement (RAP) Bins (8) abated by A-3 Water Spray System**
- **S-4 Aggregate & Reclaimed Asphalt Pavement (RAP) Conveyors abated by A-3 Water Spray System**
- **S-5 Aggregate Screen abated by A-2 Water Spray System**
- **S-6 Asphalt Oil Tank, 30,000 gallons capacity, abated by Surface Condenser, A-6**
- **S-7 Asphalt Oil Tank, 30,000 gallons capacity, abated by Surface Condenser, A-7**

S-8 Asphalt Drum Mixer/Dryer, Astec or equivalent, 125 MMBtu/hr, abated by A-1, Cyclone, Astec or equivalent, and A-2, Baghouse, Astec RBH-76 or equivalent, 76,718 cfm

S-9 Hot Mixed Asphalt Silos (4), abated by A-8, Cyclone, Astec or equivalent, and A-9, Baghouse, Astec RBH-76 or equivalent, 76,718 cfm,), and Blue Smoke Collection System, A-10, Fiber-Bed Mist Eliminator, 16,000 cfm

S-10 Truck Load-Out, abated by Blue Smoke Collection System, A-10, Fiber-Bed Mist Eliminator, 16,000 cfm

1. The owner/operator of S-8 Drum Mixer shall not process more than 300 tons of finished asphaltic concrete per hour. The owner/operator of S-8 Drum Mixer shall not process more than 225,000 tons of finished asphaltic concrete during any consecutive 12-month period. (Basis: Regulation 2-2-212 Cumulative Increase, CEQA)

2. The owner/operator of S-8 Drum Mixer shall use only natural gas fuel for this source. (Basis: Cumulative Increase, Toxics, BACT for NOx)

3. The owner/operator of S-8 shall abate the emissions from S-8 at all times it is in use, with properly maintained A-8 Cyclone and A-9 Baghouse. (Basis: BACT for PM_{10})

4. The owner/operator shall not fire more than 351,000 MMBtu of natural gas at S-8 in any consecutive 12-month period. (Basis: Cumulative Increase, BACT)

5. The owner/operator of S-8, A-8 and A-9 shall not exceed 76,718 dscfm maximum air flow rate. (Basis: Cumulative Increase, Regulation 6-1)

6. The owner/operator of S-8 shall not exceed the following emission limits (downstream of A-8 and A-9): (Basis: Cumulative Increase, BACT)
   NOx 33 ppmv@ 3% O_2 dry (0.040 lb NOx/MMBtu)
   CO 150 ppmv@ 3% O_2 dry (0.111 lb CO/MMBtu)
   PM_{10} 0.005 grain/dry standard cubic foot (filterable and condensable)
   NMOC (or POC) 0.015 lb/ton of asphalt produced

7. The owner/operator shall operate S-10 and A-10 such that the abatement efficiencies shall be maintained at a minimum of 90% for non-methane organic (NMOC) and PM_{10} by weight. (Basis: Cumulative Increase, BACT)

8. The owner/operator of the above sources shall not discharge into the atmosphere visible emissions for a period or periods aggregating more than 3 minutes in any one hour, which are as dark or darker than Ringlemann 1 or equivalent to 20% opacity. (Basis: Regulation 6-1)

9. The owner/operator shall abate S-1 Aggregate Off-Loading System, S-2 Aggregate & Reclaimed Asphalt Stockpiles, S-3 Aggregate & Reclaimed Asphalt Bins, S-4 Aggregate & Reclaimed Asphalt Conveyors, and S-5 Aggregate Screen by A-1 through A-3 Water Spray Systems or chemical suppressant, as necessary to comply with part 8. (Basis: Cumulative Increase)

10. The owner/operator shall not operate S-6 and S-7 Asphalt Oil Tanks unless emissions from these sources are abated by A-6 and A-7 Surface Condensers, respectively. (Basis: Cumulative Increase)

11. The owner/operator of S-9 Hot Mix Asphalt Silos shall abate the emissions from S-9 at all times it is in use, with properly maintained A-8 Cyclone, A-9 Baghouse and A-10 Blue Smoke Collection System. (Basis: BACT for PM_{10})

12. The owner/operator shall not operate S-10 Truck Load-Out unless it is enclosed on three sides to form a tunnel and its emissions are abated by A-10 Blue Smoke Control System. (Basis: Cumulative Increase, Toxics, BACT)

13. The owner/operator shall maintain all control equipment (A-1 through A-3 Water Spray Systems, A-6 and A-7 Surface Condensers, A-8 Cyclone, A-9 Baghouse, and A-10 Blue Smoke Collection System) in good operating condition at all times. (Basis: Cumulative Increase, BACT)

14. The owner/operator shall equip A-9 Baghouse with a device for measuring the pressure drop (or a District-approved broken bag detection device of high sensitivity, such as a Triboflow leak detector or equivalent). The pressure-drop device shall be checked weekly for evidence of leakage or plugging. (Basis: Cumulative Increase, BACT, Regulation 6, Regulation 2-1-403)

15. The owner/operator shall minimize fugitive dust from truck traffic by wetting down the roadways used by the trucks at the facility such that visible particulate emissions are less than or equal to Ringlemann 1 and do not result in fallout on adjacent property in such quantities as to cause a public nuisance. (Basis: Cumulative Increase, Regulation 6, Regulation 1)

16. The owner/operator shall not exceed 250 trucks per day (500 trips in and out) at the facility. (Basis: Cumulative Increase, CEQA)

17. The owner/operator shall not export more than 345,425 tons of aggregate and sand during any consecutive 12-month period. (Basis: Cumulative Increase, CEQA)

18. The permanent aggregate materials stockpiles (S-2) shall not occupy more than 2.45 acres of land. (Basis: cumulative increase)

19. To demonstrate compliance with parts 1, 2, 4, 5 and 16, the owner/operator shall keep the following records on a daily basis:
    a. Hours of operation of S-8.
    b. Amount of fuel used at S-8.
    c. Air Flow Rate for S-8 or A-9.
    d. Total weight of hot mix asphalt produced at S-8 (hourly, daily and yearly).
    e. Total vehicle trips.
    f. Total weight of export materials (aggregate and sand).

    These records shall be kept in a District approved log and retained for a period of at least two years from the date of entry. These records shall be kept on site and made available to the District staff upon request. (Basis: Cumulative Increase, Toxics, Recordkeeping)

20. Within 30 days of start-up of S-8, S-9 and S-10 abated by A-8, A-9 and A-10, and annually thereafter, the owner/operator shall conduct a District approved source test to

demonstrate compliance with parts 6 and 7. The NMOC and PM_{10} shall be tested simultaneously. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. Within 45 days of test completion, a comprehensive report of the test results shall be submitted to the District's Source Test Section for review. (Basis: Regulation 2-1-403, Cumulative Increase, BACT)

IX. RECOMMENDATION

Issue conditional Authorities to Construct to Dutra Materials for the following equipment:

S-1 Aggregate Off-Loading Transfer by Trucks or Enclosed Conveyors, abated by A-1 Water Spray System
S-2 Aggregate & Reclaimed Asphalt Stockpiles (8), 2.45 acres, abated by A-2 Water Spray
S-3 Aggregate & Reclaimed Asphalt Pavement (RAP) Bins (7) abated by A-3 Water Spray System
S-4 Aggregate & Reclaimed Asphalt Pavement (RAP) Conveyors abated by A-4 Water Spray System
S-5 Aggregate Screen abated by A-5 Water Spray System
S-6 Asphalt Oil Tank, 30,000 gallons capacity, abated by A-6, Surface Condenser
S-7 Asphalt Oil Tank, 30,000 gallons capacity, abated by A-7, Surface Condenser
S-8 Asphalt Drum Mixer/Dryer, Astec or equivalent, 135 MMBtu/hr, abated by A-8, Cyclone, Astec or equivalent, and A-9, Baghouse, Astec RBH-76 or equivalent, 76,718 cfm
S-9 Hot Mixed Asphalt Silos (4), 100 ton capacity, abated by A-8, Cyclone, Astec or equivalent, and A-9, Baghouse, Astec RBH-76 or equivalent, 76,718 cfm, and A-10, Blue Smoke Collection System, Fiber-Bed Mist Eliminator, 16,000 cfm
S-10 Truck Load-Out, abated by A-10, Blue Smoke Collection System, Fiber-Bed Mist Eliminator, 16,000 cfm

X. EXEMPTION

Issue an exemption letter to Dutra Materials for the following equipment:

S-11 Asphalt Oil Heater, 2 MMBtu/hr
S-11 is exempt from permit requirement per Regulation 2-1-114.1.1 for boilers with less than 10 million BTU per hour rated heat input if fired exclusively with natural gas.

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date: _____

THB:disk-d\DutraMaterials\10901\10901evaluation.doc

Appendix A
Onsite Contemporaneous Reduction Credit Calculations

Contemporaneous Baseline emissions:
For determining emission reductions, the baseline period is the 3 years period immediately preceding the date that a permit application is deemed complete per Regulation 2-2-605. This application was deemed complete on January 19, 2005; therefore the onsite contemporaneous reduction emission credits for equipment shut down will be the average emissions from actual throughput and usages of the past three years (2002, 2003 and 2004).

The following equipment was in operation between January 2002 and December 2004, and will be given onsite contemporaneous emission reduction credits for shut down of the following equipment:

S1 Asphalt Cement Batch Plant
S2 Tank
S11 Bucket Elevator, Asphalt Plant
S12 Asphalt Cement Storage Silos (2)
S13 Cold Feed Bins, Asphalt Plant (6)
S14 Conveyor System
S15 Asphalt Storage Tank, 6000 Gal
S-16 Sand Screw
S-17 Sand Feed Bunker
S-19 Quarry/Haul Roads
S-20 Aggregate storage piles
S-27 Rock Storage Piles
S-51 Conveyor system
S-52 Temporary aggregate stockpiles
S-53 Trucks to load
S-54 Permanent aggregate stockpiles

Basis: The following data was submitted to the District from Dutra Materials.

1. Asphalt throughput

January 02 – December 02	143,984 tons/yr
January 03 – December 03	186,552 tons/yr
January 04 – December 04	166,976 tons/yr
Total average (3 years)	165,837 tons/yr

2. Plant Natural Gas Consumption

January 02 – December 02	305,700 therms/yr
January 03 – December 03	462,874 therms/yr
January 04 – December 04	457,339 therms/yr
Total average (3 years)	408,638 therms/yr

3. Diesel Oil Consumption (at S-1, and Oil Heater @ 1.5 MMBtu/hr)

January 02 – December 02	64,000 gallons/yr
January 03 – December 03	0 gallon/yr
January 04 – December 04	0 gallon/yr
Total average (3 years)	21,333 gallons/yr

4. Tug/Barges Diesel Fuel Consumption

January 02 – December 02	16,995 gallons/yr for 15 barges
January 03 – December 03	21,527 gallons/yr for 19 barges

January 04 – December 04	27,192 gallons/yr for 25 barges
Total average (3 years)	21,905 gallons/yr

S-1 Asphalt Cement Batch Plant abated by Baghouse A-1

Emission from screening
Annual PM_{10} emissions = 155,887 ton/yr X 0.00074 lb/ton = 115.4 lb/yr PM_{10}

Emissions from Asphalt Drum Mixer/Dryer abated by Baghouse, A-1

- The best performance source test results for the baghouse was 0.019 gr/dscf, conducted on August 20, 2001 by the District. The best performance grain loading is used for conservative purpose
- Maximum operating hours = 10 hrs/day, 5 days/wk, 52 wks/yr = 2600 hr/yr
- Maximum design CFM = 42,000 scfm, per conversation with Josh Kirtley of Dutra Materials on 8/25/05

(0.019 gr/ ft3) (42,000 ft3/min X 60 min/hr X 10 hr/day) / (7000 gr/lb) = 68.4 lb/highest day
Maximum Annual PM_{10} emissions = 68.4 lb/day X 5 days/wk X 52 wks/yr = 17,784 lb/yr (8.89 tpy) PM_{10}

Combustion Emissions:
Basis:

- Following are the summary of test results from six source tests conducted by the District in the past. Emission factors for NOx and CO are converted to 15% O2. (See attached source test results for detail)

Test Date	NOx lb/hr	CO lb/hr	SO2 lb/hr	PM_{10} (gr/dscf)	POC lb/hr
9/30/04	N/A	138	N/A	0.079	N/A
11/20/01	**1.890**	**34.488**	**0.3**	**0.019**	**31**
8/20/01	5.275	56.044	0.4	0.038	34
9/22/00	4.688	332.8	0.4	0.030	57
6/19/97	7.500	24.00	<1	not complete	N/A
8/25/94	N/A	22.50	N/A	not complete	N/A

- Best performance data for NOx and reasonable CO emission factors were based on recent source test results from November 20, 2001 (NOx = 1.89 lb/hr / 61.77 therm/hr = 0.031 lb/therm; CO = 34.488 lb/hr / 61.77 therm/hr = 0.558 lb/therm)
- Best performance data for S02 was based on recent source test results from November 20, 2001 ($\leq$ 2 ppmv or $\leq$ 0.3 lb/hr at 250 ton/hr; therefore, the emission factor is 0.0012 lb/ton)
- PM_{10} were based on EPA. AP-42 factors (Table 1.4-2) for natural gas combustion, dated 7/98
- Best performance data for POC was based on recent source test results from November 20, 2001 (31 lb/hr at 250 ton/hr; therefore, the emission factor is 0.124 lb/ton)
- Heat Input is from the annual update information submitted by Dutra Materials on an annual basis

Natural gas	Jan. 02 – Dec. 02	305,700 therms/yr
Consumption	Jan. 03 – Dec. 03	462,874 therms/yr
	Jan. 04 – Dec. 04	457,339 therms/yr
Total average (3 years)		408,638 therms/yr or 40,863.8 MMBtu/yr

NOx = (0.031 lb/therm)(408,638 therm/yr) = 12,668 lb/yr or 6.334 ton/yr
CO = (0.558 lb/therm)(408,638 therm/yr) = 228,020 lb/yr or 114 ton/yr

SO2 = (0.0012 lb/ton)(169,477 ton/yr) = 203.4 lb/yr or 0.102 ton/yr
PM_{10} = (0.0075 lb/MMBtu)(40,863.8 MMBtu/yr) = 306.5 lb/yr or 0.153 ton/yr
POC = (0.124 lb/ton)(169,477 ton/yr) = 21,015 lb/yr or 10.5 ton/yr

S-11 Truck Load-Out
Basis:

- Equation for total organic, PM and CO emissions for silo filling used is in AP-42, Table 11.1-14 (dated 3/04)
- T= 325 0F
- V= -0.5 asphalt volatility

TOC = 0.0172 (-V) exp [(0.0251)(T+460)-20.43] = 0.00416 lb TOC/ton asphalt
Annual throughput = 165,837 ton/yr X 0.00416 lb/ton = 689.88 lb/yr or 0.345 tpy

PM = 0.000181 + 0.00141 (-V) exp [(0.0251)(T+460)-20.43] = 0.000522 lb PM/ton
Annual throughput = 165,837 ton/yr X 0.000522 lb/ton = 86.667 lb/yr or 0.043 tpy

CO = 0.00588(-V) exp [(0.0251)(T+460)-20.43] = 0.00142 lb CO/ton
Annual throughput = 165,837 ton/yr X 0.00142 lb/ton = 235.5 lb/yr or 0.118 tpy

S-12 Hot Mixed Asphalt Silos
Basis:

- Equation for total organic, PM and CO emissions for silo filling used is in AP-42, Table 11.1-14 (dated 3/04)
- T= 325 0F
- V= -0.5 asphalt volatility

TOC = 0.0504 (-V) exp [(0.0251)(T+460)-20.43] = 0.0122 lb TOC/ton asphalt
Annual throughput = 165,837 ton/yr X 0.0122 lb/ton = 2,023 lb/yr or 1.012 tpy

PM = 0.00332 + 0.00105 (-V) exp [(0.0251)(T+460)-20.43] = 0.000585 lb PM/ton
Annual throughput = 165,837 ton/yr X 0.000585 lb/ton = 97.0 lb/yr or 0.0485 tpy

CO = 0.00488(-V) exp [(0.0251)(T+460)-20.43] = 0.00118 lb PM/ton
Annual throughput = 165,837 ton/yr X 0.00118 lb/ton = 196 lb/yr or 0.098 tpy

S-13 Cold Feed Bins (6) Emissions

- Same basis as above with assumed 70% control for water spray
- 94% of the asphalt production is aggregate and sand = 165,837 tpy X 0.94 = 155,887 tpy

S-13 Drop operation:
Annual Emissions = 155,887 ton/yr X 0.00078 lb/ton X (1-0.7) X 6 = 218.9 lbs/yr

S-14 Conveyor System

- Same basis as above

S-14 Emission from conveyors:
Annual throughput = 155,887 ton/yr X 0.000046 lb/ton X 4 transfer points = 28.7 lb/yr

S-15 Asphalt Oil Tank
Basis:

- EPA Tanks Program 4.0 is used to calculate the oil tanks with 12,379,836 gallons per year and a vapor pressure of 0.0008 psia.
- Operating times are 2600 hr/yr

Total emission loss is 16 lb/yr for one tank (See attached detailed calculation)

S-16 Sand Screw

- Same basis as above
- 94% of the asphalt production is aggregate and sand = 165,837 tpy X 0.94 = 155,887 tpy

S-16 Drop operation:

Annual Emissions = 155,887 ton/yr X 0.00078 lb/ton X (1-.07) = 36.5 lbs/yr

S-17 Sand Feed Bunker

- Same basis as above
- 94% of the asphalt production is aggregate and sand = 165,837 tpy X 0.94 = 155,887 tpy

S-17 Drop operation:

Annual Emissions = 155,887 ton/yr X 0.00078 lb/ton X (1-0.7) = 36.5 lbs/yr

S-19 Quarry/Haul Roads

- PM_{10} emissions factors from the truck traffic on the paved and unpaved roads within the plant are calculated from AP-42 Sections 13.2.1 and 13.2.2, respectively (12/03).
- Water spraying on the unpaved road and the control efficiency is assumed to 80%.
- Unpaved Road = 0.95 vehicle miles traveled (VMT) per operating day and 417 VMT/yr on the unpaved road per operating day.
- Paved road = 18.8 VMT/day and 5,170 VMT/yr on the paved road.

Paved road:

$E = k[sL/2]^{0.65}[W/3]^{1.5}$ - C = 0.016 $[4.8/2]^{0.65}$ X $[25/3]^{1.5}$ - 0.00047 = 0.6795 lb/VMT

k= particle size multiplier = 0.016 lb/VMT (vehicle mile traveled) from Table 13.2.1-1

sL = road surface silt loading = 4.8

W = Average weight (ton) of travel vehicle the road = 25 tons

C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear = 0.00047 lb/VMT from Table 13.2.1-2

E = 0.6795 lb/VMT X 5,170 VMT/yr X (1-0.8) = 702.6 lb/yr PM

Unpaved road:

$E = k[s/12]^{a}[W/3]^{b}$ = 1.5 $[3.66/12]^{0.9}$ X $[25/3]^{0.45}$ = 1.338 lb/VMT

k= particle size multiplier = 1.5 lb/VMT (vehicle mile traveled), Table 13.2.2-2 industrial road

s = surface material silt content % = 3.66 for industrial road

a = 0.9 from Table 13.2.2-2

b = 0.45 from Table 13.2.2-2

W = Average weight (ton) of travel vehicle the road = 25 tons

E = 1.338 lb/VMT X 417 VMT/yr X (1-0.8) = 111.6 lb/yr PM_{10}

S-20 Aggregate Storage Piles

Basis:

- Uncontrolled PM_{10} emission factor for stockpile is taken from AP-42, Section 8.19.1-1 (dated 9/91). The current AP-42 for stockpile emissions uses a predictive emission factor equation, which yields lower emissions than the 6.3 lb/acre/day for PM_{10}. This factor is used because the stockpile source has minimal emissions and the new predictive equation in the current AP-42 is not all that straightforward and produces a slightly lower result.
- S-20 occupies 0.33 acre.

Aggregate Storage Piles

Annual Emissions = 6.3 lb/acre/day X 0.33 acre X 365 day/yr = 758.8 lb/yr PM_{10}

Daily Emissions = 6.3 lb/acre/day X 0.33 acre = 2.08 lb/day PM_{10}

S-27 Rock Storage Piles

Basis:

- Uncontrolled PM_{10} emission factor for stockpile is taken from AP-42, Section 8.19.1-1 (dated 9/91). The current AP-42 for stockpile emissions uses a predictive emission factor equation, which yields lower emissions than the 6.3 lb/acre/day for PM_{10}. This factor is used because

the stockpile source has minimal emissions and the new predictive equation in the current AP-42 is not all that straightforward and produces a slightly lower result.
- S-27 occupies 0.5 acre per condition # 7989.

Rock Storage Piles
Annual Emissions = 6.3 lb/acre/day X 0.5 acre X 365 day/yr = 1150 lb/yr PM_{10}
Daily Emissions = 6.3 lb/acre/day X 0.5 acre = 3.15 lb/day PM_{10}

S-51 Conveyor System
Basis:
- Equation for uncontrolled PM_{10} emissions for Aggregate Handling and Storage Piles used is in AP-42, Section 13.2.4 (dated 1/95).
- 80% of control efficiency is assumed for PM_{10} emissions at the conveyor system because of the wet condition (18% moisture content as specified in previous Application # 8882).
- Operating times are 260 hr/yr.

$E = k(0.0032) [U/5]^{1.3}/[M/2]^{1.4}$ = 0.35 X 0.0032 $[8/5]^{1.3}$ / $[4/2]^{1.4}$ = 0.00078 lb/ton per transfer point
E = particulate emissions 10 microns size
k= particle size multiplier = 0.35
U = mean wind speed = 8 mile/hr
M = moisture content = 4%

S-51 Emission = 50,000 ton/yr X 0.00078 lb/ton X 3 transfer points X (1-0.8) = 23.5 lb/yr or 0.09 lb PM_{10}/highest day

S-52 Temporary Stockpiles
Basis:
- Uncontrolled PM_{10} emission factor for stockpile is taken from AP-42, Section 8.19.1-1 (dated 9/91). The current AP-42 for stockpile emissions uses a predictive emission factor equation, which yields lower emissions than the 6.3 lb/acre/day for PM_{10}. This factor is used because the stockpile source has minimal emissions and the new predictive equation in the current AP-42 is not all that straightforward and produces a slightly lower result.
- S-52 occupies 0.33 acre.
- 80% of control efficiency is assumed for PM_{10} emissions at the temporary stockpile because of the wet condition (18% moisture content).

Annual Emissions = 6.3 lb/acre/day X 0.33 acre X (1-0.8) X 365 day/yr = 151.8 lb/yr PM_{10}
Daily Emissions = 6.3 lb/acre/day X 0.33 acre X (1-0.8) = 0.416 lb/day PM_{10}

S-53 Truck Loading Operation
Basis:
- Fugitive emissions = Loading operation + traffic dust (unpaved road) + traffic dust (paved road)
- PM_{10} emissions factors from the truck traffic on the paved and unpaved roads within the plant are calculated from AP-42 Sections 13.2.1 and 13.2.2, respectively (12/03).
- There will be water spraying on the unpaved road and the control efficiency is assumed to 80%.
- There are 8.3 vehicle miles traveled on the unpaved road per operating day, and 41.7 vehicle miles traveled on the paved road per operating day. Typical operating time is 34 days per year.

Loading operation:
E = 50,000 ton/y X 0.00078 lb/ton X 2 transfer points X (1-0.8) = 15.6 lb/yr or 0.06 lb/highest day

Paved road:
$E = k[sL/2]^{0.65}[W/3]^{1.5}$ - C = 0.016 $[4.8/2]^{0.65}$ X $[25/3]^{1.5}$ - 0.00047 = 0.6795 lb/VMT
k= particle size multiplier = 0.016 lb/VMT (vehicle mile traveled) from Table 13.2.1-1
sL = road surface silt loading = 4.8
W = Average weight (ton) of travel vehicle the road = 25 tons
C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear = 0.00047 lb/VMT from Table 13.2.1-2
E = 0.6795 lb/VMT X 8.3 VMT/day X 34 day/yr X (1-0.8) = 38.35 lb/yr PM

Unpaved road:
$E = k[s/12]^{a}[W/3]^{b}$ = 1.5 $[3.66/12]^{0.9}$ X $[25/3]^{0.45}$ = 1.338 lb/VMT
k= particle size multiplier = 1.5 lb/VMT (vehicle mile traveled), Table 13.2.2-2 industrial road
s = surface material silt content % = 3.66 for industrial road
a = 0.9 from Table 13.2.2-2
b = 0.45 from Table 13.2.2-2
W = Average weight (ton) of travel vehicle the road = 25 tons
E = 1.338 lb/VMT X 41.7 VMT/day X 34 day/yr X (1-0.8) = 379.4 lb/yr PM_{10}

S-53 emissions = 15.6 lb/yr + 38.35 lb/yr + 379.4 lb/yr = 433.35 lb/yr PM_{10}

S-54 Permanent Stockpiles including Barge Emissions
Basis:

- Uncontrolled PM_{10} emission factor for stockpile is taken from AP-42, Section 8.19.1-1 (dated 9/91). The current AP-42 for stockpile emissions uses a predictive emission factor equation, which yields lower emissions than the 6.3 lb/acre/day for PM_{10}. This factor is used because the stockpile source has minimal emissions and the new predictive equation in the current AP-42 is not all that straightforward and produces a slightly lower result.
- S-54 occupies 0.33 acre.
- The emission factors for NOx, CO, POC, and PM_{10} for barge (tug boat assisted) are from Chevron report dated 11/18/81. (See attachment)
- Barge is not self-propelled; therefore, one tugboat used to assist the barge. There are 25 maximum round trips per year. Each round trip is about 8 hours. Total fuel usage of the tugboat is 150 gallons per hour, or 30,000 gallons of diesel per year.
- SO2 is calculated using 0.05% sulfur content by weight.

Aggregate Storage Piles
Annual Emissions = 6.3 lb/acre/day X 0.33 acre X 365 day/yr X (1-0.8) = 151.77 lb/yr PM_{10}
Daily Emissions = 6.3 lb/acre/day X 0.33 acre X (1-0.8) = 0.416 lb/day PM_{10}

Barge (tug boats) emissions was based on US EPA 2000 Analysis of Commercial Marine Vessel Emissions and Fuel Consumption, Table 5-1 on Page 5-3, EPA 420-R-00-002. See attachment for detailed calculation of 25 round trips of tugboats per year.
NOx = 69.47 lb/day, 1,737 lb/yr or 0.868 tpy
CO = 14.01 lb/day, 350.19 lb/yr or 0.175 tpy
POC = 1.87 lb/day, 46.65 lb/yr or 0.023 tpy
PM_{10} = 1.78 lb/day, 44.38 lb/yr or 0.022 tpy
SOx = 13.01 lb/day, 325.23 lb/yr or 0.163 tpy

Total Onsite Contemporaneous Emissions Reductions

Sources	Annual Emissions	Annual Emissions
S-1 –screening	115.4 lb/yr PM_{10}	0.058 tpy PM_{10}
Particulate Emissions	17,784 lb/yr PM_{10}	8.892 PM_{10}
Combustion	12,668 lb/yr NOx	6.334 tpy NOx
Included with S-1	228,020 lb/yr CO	114 tpy CO
	21,015 lb/yr POC	10.5 tpy POC
	203.4 lb/yr SO2	0.102 tpy SO2

	306.5 lb/yr PM_{10}	0.153 tpy PM_{10}
S-11	86.67 lb/yr PM	0.043 tpy PM
TOC (assume as POC)	689.88 lb/yr POC	0.345 tpy POC
CO	235.5 lb/yr CO	0.118 tpy CO
S-12	97.0 lb/yr PM	0.0485 tpy PM
TOC (assume as POC)	2,023.1 lb/yr POC	1.012 tpy POC
CO	195.7 lb/yr CO	0.0978 tpy CO
S-13	218.9 lb/yr PM_{10}	0.109 tpy PM_{10}
S-14	28.7 lb/yr PM_{10}	0.014 tpy PM_{10}
S-15	16 lb/yr POC	0.008 tpy POC
S-16	36.5 lb/yr PM_{10}	0.0182 tpy PM_{10}
S-17	36.5 lb/yr PM_{10}	0.0182 tpy PM_{10}
S-19	814.2 lb/yr PM_{10}	0.407 tpy PM_{10}
S-20	758.8 lb/yr PM_{10}	3.79 tpy PM_{10}
S-27	1150 lb/yr PM_{10}	0.57 tpy PM_{10}
S-51	23.5 lb/yr PM_{10}	0.0118 tpy PM_{10}
S-52	151.8 lb/yr PM_{10}	0.076 tpy PM_{10}
S-53	433.35 lb/yr PM_{10}	0.217 tpy PM_{10}
S-54	151.8 lb/yr PM_{10}	0.076 tpy PM_{10}
Barge emissions	1,737 lb/yr NOx	0.868 tpy NOx
Included with S-54	350 lb/yr CO	0.175 tpy CO
	47 lb/yr POC	0.023 tpy POC
	325 lb/yr SO2	0.163 tpy SO2
	44 lb/yr PM_{10}	0.022 tpy PM_{10}

Total 7.202 tpy NOx 0.264 tpy SO2 114.4 tpy CO 11.9 tpy POC 11.12 tpy PM_{10}

Emission Increase (Decrease) From This Application

Pollutants	Future Emissions lbs/yr (tpy)	Onsite Reduction Credit lbs/yr (tpy)	Emission lbs/yr / tpy Increase (Decrease)
NOx	14,040 (7.02)	14,405 (7.202)	(365)/(0.183)
SO2	1,193 (0.60)	528.6 (0.264)	664.77 / 0.33
CO	39,626 (19.81)	228,801 (114.401)	(189,176)/(94.59)
POC	6,476 (3.238)	23,791 (11.895)	(17,483)/(8.74)
PM_{10}	14,469 (7.235)	22,238 (11.119)	(7,769)/(3.88)

Appendix B
Toxic Air Contaminants Calculations

Source	S-10	S-10	S-9	S-9	S-8	S-8	AP-42 EF	AP-42 EF	
	Loadout	**Loadout**	**Silo Fill**	**Silo Fill**	**Drum Mix**	**Drum Mix**			
Toxics									
Name	**(lb/hr)**	**(lb/yr)**	**(lb/hr)**	**(lb/yr)**	**(lb/hr)**	**(lb/yr)**	**(lb/hr)**	**(lb/yr)**	
Non-PAH Hazardous Air Pollutants									
Benzene	8.20E-05	6.15E-02	1.17E-03	4.40E-04	2.69E-02	2.02E+01	0.118	**87.812**	YES
Carbon Disulfide	2.05E-05	1.54E-02	5.85E-04	4.39E-01			6.05E-04	4.54E-01	
Ethyl Benzene	1.85E-04	3.31E-01	1.39E-03	1.04E+00	8.22E-03	6.17E+00	0.074	**55.373**	YES
Formaldehyde	1.39E-04	1.04E-01	2.52E-02	1.89E+01	7.71E-02	5.78E+01	**0.955**	**716.524**	YES
Hexane	2.37E-04	1.77E-01	3.66E-03	2.74E+00			2.80E-01	2.10E+02	
Methyl Chloroform					8.61E-04	6.46E-01	1.44E-02	1.08E+01	
Phenol	1.21E-04	9.05E-02					1.21E-04	9.05E-02	
Styrene	1.15E-05	8.64E-03	1.97E-04	1.48E-01			2.09E-04	1.57E-01	
Toluene	3.31E-04	2.48E-01	2.27E-03	1.70E+00	1.30E-02	9.72E+00	4.76E-02	3.57E+01	
Xylene					1.28E-02	9.59E+00	6.00E-02	4.50E+01	
Xylene-m/p	6.47E-04	4.85E-01	7.31E-03	5.48E+00			7.96E-03	5.97E+00	
Xylene-o	1.26E-04	9.47E-02	2.08E-03	1.56E+00			2.21E-03	1.66E+00	
PAH Hazardous Air Pollutants									
Calculated Benzo(a)pyrene-equivalents	4.32E-07	3.24E-04	5.86E-07	4.40E-04	1.07E-06	7.99E-04		1.60E-03	
Naphthalene	1.28E-04	9.59E-02	1.39E-04	1.04E-01	7.44E-03	5.58E+00	0.021	**16.052**	YES
Metals									
Arsenic					2.01E-04	1.51E-01	0.00004	**0.032**	YES
Beryllium					2.50E-04	1.87E-01			
Cadium					5.34E-04	4.01E-01	0.0001	**0.072**	YES
Chromium Hexavalent					1.34E-04	1.01E-01	0.0001	**0.079**	YES
Copper					9.81E-04	7.36E-01	7.28E-04		
Lead					1.31E-03	9.81E-01	1.46E-04	1.09E-01	
Manganese					6.00E-03	4.50E+00	0.0018	1.356	
Mercury					3.24E-03	2.43E+00	0.0001	0.042	
Nickel					1.09E-03	8.17E-01	**0.0148**	**11.097**	YES
Phosphorous							0.0066	4.932	
Selenium					2.00E-04	1.50E-01	8.22E-05	6.16E-02	
Zinc					3.90E-03	2.93E+00	1.43E-02	1.07E+01	

APPENDIX C

Final Conditional Use Permit Conditions of Approval from Sonoma County

APPENDIX D

Dutra CEQA Findings, Supporting Facts and Statement of Overriding Considerations from BAAQMD